preached in Christ Church Cathedral on May 18, 1890, by the Bishop of Missouri. The book is illustrated by plans of the garden, a large number of views of the museums and other buildings, including Mr. Shaw's house and a fine statue of Humboldt.

Everything is now in full working order, and we have just received from Prof. Trelease a capital synopsis of the American species of the difficult genus Epilobium, containing full botanical descriptions and figures of all the species. The herbarium now contains about 20,000 mounted sheets of flowering plants and ferns, also a large collection of Fungi and other Cryptogamia.

J. G. B.

Géologie: Principes—Explication de l'Époque Quaternaire sans Hypothèses. Par H. Hermite. Pp. 145. (Neuchatel, 1891.)

ON taking up this little book the geological reader is at once struck by the words "sans Hypothèses" in the title. A volume on Pleistocene geology free from hypotheses would seem to him to usher in a new era in geology, and would be most heartily welcomed by him. The title of the present work, however, is misleading; the book is almost entirely devoted to theoretical explanations of purely hypothetical facts. We have not space to notice in detail the various subjects of which the author treats, but as an example of his method we may point to his "Origine des Pluies Quaternaires" (p. 39). In this section he accepts the hypothetical Quaternary "Pluvial Period"—which, by the way, seems to have been characterized by a singularly poor aquatic fauna and flora—and he then accounts for the supposed excessive rainfall during Tertiary and Quaternary time by the amount of vapour thrown out by volcanoes, adding that the small rainfall of the Secondary periods is accounted for by the absence of volcanic action during those periods! Then we meet with our old acquaintance the former excess of carbonic acid in the air and its influence on the ancient climate of the polar regions—possibly correct, but certainly hypothetical. Further on, speaking of the origin of the continental platform at a depth of 200 metres, the author states that this feature results from the raising of the general level of the sea from the melting of the Quaternary ice; and from this hypothetical raising he arrives at the result that the mass of the Quaternary ice corresponded to the total mass of the sea now lying above the level of the continental platform. Another speculation relates to the breaking through of the Indian Ocean across Siberia to the Polar seas, thus causing a milder climate, and accounting also for the parallel roads of Glen Roy and the terraces in Norway and Greenland. We cannot pretend to follow the reasoning, but it is all somehow connected with the author's theory "qu'à une diminution de la densité des mers correspond un abaissement de leur surface."

C. R.

Webster's International Dictionary of the English Language. Revised and Enlarged under the Supervision of Noah Porter, D.D., LL.D. (London: George Bell and Sons. Springfield, Mass. U.S.A.: G. and C. Merriam and Co.)

WEBSTER'S Dictionary is so well known on both sides of the Atlantic that it is unnecessary to do much more than note the appearance of the present edition. The work was published originally in 1828, after which it was steadily improved in successive issues. It has now been revised so thoroughly, and with the aid of so many competent scholars, that for popular use it can hardly fail to maintain the ground it has already won. Much prominence is given to "the definitions and illustrations of scientific, technological, and zoological terms," and in the preface to the English edition it is stated that no pains have been spared to make this part of the book "as perfect as possible in both text and illustration." The definitions in particular branches of science have been revised by such men as Prof. H. A. Newton and Prof. E. S. Dana—names which are a sufficient guarantee for the way in which the task has been accomplished. In the department of etymology, Prof. E. S. Sheldon, of Harvard University, has carefully dealt with the results presented in the last edition, bringing them into accord with the philological ideas of the present day. The pictorial illustrations are numerous, and well adapted to the purposes for which they are inserted.

Elementary Chemistry; for Beginners. By W. Jerome Harrison, F.G.S. (London: Blackie and Son, 1890.)

THIS volume of 144 pages consists of an expansion of the author's notes of lessons prepared for teaching children from nine to thirteen years of age according to the outlines given in the education code. The information is conveyed in familiar language, and each chapter closes with a series of questions which are well calculated to test the child's progress. It is a pity to issue any book that deals with scientific matters without a contents table and an index, and we fear that the absence of these in the present case will lead to inconvenience. And we would suggest that the quantities selected for the examples might approximate more closely to those most generally employed. The hydrogen from the use of a ton of zinc, the preparation of 1000 lbs. of carbon dioxide, eighteen quarts of oxygen mixed with an equal volume of hydrogen and exploded, ten gallons of hydrogen mixed with half its volume of chlorine and exposed to sunlight, indicate experiments on an extravagant if not an appalling scale. These, however, are matters of detail. The notes of so successful a teacher as Mr. Jerome Harrison cannot fail to be valuable to others who are engaged in a like work as well as to the students themselves.

Examination of Water for Sanitary and Technical Purposes. By Henry Leffmann, M.D., Ph.D., and William Beam, M.A. Second Edition. (London: Kegan Paul, Trench, Trübner and Co., Ltd., 1891.)

THE fact that a second edition has been called for only two years after the issue of the first, shows that this excellent hand-book has been very generally appreciated. The authors have revised the work and made many additions to it chiefly of processes that have recently grown in importance. Among the principal of these additions, we observe that the three pages on "Living Organisms in Water" of the first edition are now expanded into a chapter of thirteen pages entitled, "Biological Examinations." A table of culture phenomena of some of the more important microbes is given. But concerning this matter the authors state that "until pathogenic microbes are more clearly indicated and described, the methods will be of little use in dealing with the problem of the determination of the sanitary and technical value of water supplies."

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The University of London.

I DO not wish to criticize in the least Prof. Lankester's valuable statement in your last issue, with which I entirely agree; but I desire to point out that unless some energetic action is taken very soon we are likely to be farther than ever from the ideal which he has in view—namely, the establishment of a strong professorial University in London. The only scheme at present in the field is that put forward by the Councils of University and King's Colleges in the proposed charter for an Albert University.

This scheme has never met with the cordial support of a large section at least of the teaching staff of University College, and for the very obvious reason that it does not constitute a professorial University, but creates a new examining body on which the two Colleges will be, in the beginning at any rate, largely represented. The Albert University charter would create a second Victoria University in London. Now, both Mr. Dyer and Prof. Lankester are agreed that we do not want a federal University like Victoria in London; but they seem to forget that this pettifogging excuse for a University—a scheme drafted by bureaucratic rather than academic minds—is the only scheme in the field, and that, further, the Lord President of the Council has determined to hear by counsel, on an early day in June, what can be said for and against this scheme. It is further rumoured that the Burlington House Senate intends, after its recent discomfiture, to remain absolutely neutral. The danger, then, that we shall have a repetition in London of the difficulties of Manchester is a very immediate one. Let me point out exactly the anomalies of the Albert scheme. In the first place, it does not create a teaching University, but a new examining body. The University as such will have no control over the appointment of the professoriate either at University or King's Colleges, it will have no funds to dispose of, and there will be nothing to prevent rival second-rate teachers and teaching equipment instead of first-rate central teaching and central laboratories. For example, at the present time, putting aside the Central Institute, we have some half-dozen second-rate physical laboratories in London, but not a really first-class one worthy of a modern University among them. So long as there is competition between the Colleges, so long as they possess a double staff competing at every turn with each other for students' fees, this is unlikely to be remedied. Prof. Lankester speaks of a *union* of King's and University, and talks about their *combined* resources. The fusion of these two Colleges would certainly be the first stage to a true professorial University in London, but there is nothing in the Albert charter to bring this about: it unites the two Colleges not for teaching but for examining purposes. But what is still worse, while these two Colleges will remain autonomous, the Albert charter proposes to admit any further autonomous bodies, the teaching of which can be shown to have reached a certain academic standard. These bodies will not be absorbed, but their independent staffs will be represented on the Faculties and Senate. Here we have in fact the University of London over again,—at first composed almost entirely of the two Colleges, afterwards embracing all sorts and conditions of institutions in London, and ultimately open to every isolated text-book reader in the universe. It cannot be therefore too strongly insisted upon that the Albert charter, if granted, will not call into existence a professorial University, but federate a group, and an ever-widening group, of competing institutions for the purposes of *examination*. If it sheds for a time any additional lustre on the teaching staffs of the two Colleges—which I am much inclined to doubt—it will not achieve, what most of us have at heart, the establishment in London, at any rate in the germ, of a great University in the Scottish or German sense. A University, on the scale we hope for, would *absorb* the plant of University and King's Colleges, of the Royal College of Science, and of the Central Institute without the least difficulty. With the death or transference of existing teachers, whose pecuniary interests would have of course to be carefully safeguarded, special branches of higher teaching and research might be localized at these various centres,[1] and we thus might reach in the future an efficient University organization in London. This may indeed be considered a merely ideal future, but any scheme like the proposed Albert University, which will only impede its ultimate realization, ought to meet with strenuous opposition from those who believe that a great professorial University must sooner or later be established in London.

The difficulty as to the granting of medical degrees will for long be the stumbling-block of any scheme, but the true way to surmount it seems to be that suggested by Prof. Lankester—namely, the complete divorce of the clinical teaching at University and King's Colleges from the science teaching, and the establishment of separate clinical schools at the existing College hospitals on precisely the same footing with regard to the University as the other medical schools. The preliminary science teaching at the various medical schools might then be safely intrusted to University readers, who might continue to be, as they now largely are, peripatetic. These readers would naturally belong to the science faculty of the new University, and if largely paid by students' fees might be trusted to safeguard the "preliminary scientific interests" of the medical schools. It seems to me, therefore, that some vigorous effort ought to be made to obtain the modification of the Albert University scheme in the sense indicated by the following proposals:—

PROPOSALS *in re* TEACHING UNIVERSITY.

No scheme for the constitution of a teaching University in London will be satisfactory which does not:

1. Place the appointment of the teaching staff, as well as the control of laboratories, libraries, and buildings, in the hands of a single executive body, hereinafter spoken of as the new University Senate, or of bodies, such as Faculties or boards of study, to which it may delegate its powers.

2. Confer on the new University Senate the power of granting degrees in all Faculties, including that of Medicine.

3. Give to the teaching staff an immediate representation of one-third, and an ultimate representation of at least one-half, on the new University Senate.

These conditions would probably be best fulfilled by:

4. The immediate fusion of the Councils of University and King's Colleges, and the Council or Governing Body of any other institution doing work of admittedly academic character in London, which may be willing that its laboratories and equipment should be placed under the control of the new University Senate.

[This would remove any ground from the objection that the two Colleges are claiming powers which they are not willing to share with the Royal College of Science or the Central Institute. It provides for these latter coming into the scheme on the same terms, if that is possible.]

5. The granting of a Charter to a body consisting of these combined Councils together with representatives of the teachers in the combined institutions.

6. The constitution of the new University Senate in the following manner:—

A. Immediate constitution—
  (1) The fused Councils of King's and University Colleges or their representatives.
  (2) The Councils of other academic bodies in London willing to be absorbed, or their representatives.
  (3) Representatives of the teachers to the extent of one-third of the total number.

B. Ultimate constitution—
  (1) University professors, either as *ipso facto* members or as representatives of the body of professors.
  (2) Representatives of the Faculties (*i.e.* of the readers and professors of each Faculty).
  (3) Co-optated members, not to be selected from the teaching staff.

  And possibly,

  (4) Representatives of bodies willing to endow professorships in the new University, or to hand over to the control of the University existing professorships or lectureships, *e.g.* (*a*) the Corporation of the City and the Mercers' Company as trustees of Sir Thomas Gresham's estate; (*b*) the Inns of Court—provided these bodies are willing to attach the Gresham Lecturers and the Readerships instituted by the Council of Legal Education to the new University.
  (5) Representatives of the Medical Schools and Royal Colleges of Physicians and Surgeons other than those selected by the Medical Faculty. This would only be a matter for consideration when the power to grant medical degrees became actual.

7. The transition from the immediate to the ultimate constitution of the new University Senate in the following manner:—

  (*a*) By not filling up vacancies among the members contributed to the new Senate by the existing College Councils as such occur.
  (*b*) By the increase of professorial members and representatives of the Faculties.

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[1] *Elementary* teaching in many branches might for local convenience be still carried on at several centres.

8. The suspension of the power to grant medical degrees until such time as the Senate of the new University shall have satisfied the Lord President of the Council that an agreement has been reached with the Royal Colleges and the chief London Medical Schools as to the terms on which medical degrees shall be granted.

9. Providing, on the repeal of the Acts of Incorporation of University and King's Colleges which would accompany the granting of the new Charter, special regulations for the control of certain portions of the endowments or of certain branches of the College teaching, which it may not seem possible or advisable at present to hand over without special conditions to the management of the new Senate. For example, the Department of Divinity at King's College.

10. Paying due regard to the pecuniary interests of existing teachers (many of whom depend entirely upon students' fees) in the appointment of future University professors or readers.

11. Offering those professors of the existing Colleges, who might be willing to surrender the title of College professor, that of University reader, but not creating the occupants of chairs in any of the existing Colleges *ipso facto* professors in the new University.

In this mere sketch I have said nothing as to how faculties and boards of study might be constituted or as to how the University should grant degrees, for these seem to me "academical" problems, *i.e.* problems to be thrashed out by the University itself when it is once incorporated. Objection will be taken to much of the above by many individuals, but I believe it foreshadows the direction in which the *only scheme at present under discussion* must be modified if it is to lead to the ultimate establishment of a great teaching University in London, and not to a mere organization of teachers for examination purposes.

KARL PEARSON.

IT seems to me that the force of the arguments of Profs. Lankester and Ramsay in last week's NATURE (May 28, pp. 76, 78), so far as they harmonize with each other, would have to be admitted, if the main object of a University were to foster that premature specialism, which, under the scholarship system, has already wrought great mischief to real education in this country, or to increase as far as possible the number of clever but half-educated specialists, with which a close acquaintance with any of the great scientific societies makes one only too familiar. The example of this has been well set by at least one of the great metropolitan day schools. The fatal weakness of the arguments referred to is that they ignore, as no University ought to do, the claims of general education. If the advancement of scientific research is really desired by University and King's Colleges, all they have to do is to institute on their own account a diploma of the nature of the Associateship of the Royal School of Mines or College of Science, and make the training for it so good and thorough that the possessors of such a diploma shall be such a *desideratum* in those "commercial" quarters to which Prof. Ramsay appeals as a sort of final authority, that they shall drive such creatures as B.Sc.'s out of the field. Special brain-power, highly developed, is no doubt a splendid thing in its way, and recognition of it in the field of science is fully provided for in the B.Sc. honours, and in the ultimate D.Sc. degree; but, in considering the terms on which a *degree* should be given, general education and culture cannot be left out of account. In Germany something of the sort is guaranteed by the examinations which have to be passed on leaving the gymnasium (or high school) before students proceed to the University to specialize; in England it has been found necessary to institute the matriculation examination. That need, however, is no longer so imperative as it was; and for my own part I see no real objection to the "leaving certificate" of the Oxford and Cambridge Examining Board being accepted in lieu thereof; for I speak of what I know, when I say that this carries with it a guarantee of as much education and culture as the Matriculation Examination does, and often a great deal more. I would only stipulate that it should include one modern language and one branch of science.

Prof. Ramsay has over-ridden his horse, by the emphatic preference he gives to a German degree. He is a comparatively young man; but some of us (who are not yet quite senile) can remember the time when the facilities for obtaining the German Ph.D. degree were such (they are such to this day in America) that the degree became a by-word and a reproach, and still carries with it suspicions altogether disadvantageous to those who have taken the genuine degree in Germany. This is surely a warning against the multiplication of small Universities in this country. Again, if the time-honoured Universities of Oxford and Cambridge are not proof against the temptation to swell the contents of the University chest by accepting fees for the silken degree of M.A., which in the eyes of the *vulgus* is supposed to represent higher intellectual attainments than the B.A., can we expect greater virtue in a small and brand-new University struggling to "make both ends meet"? Were any further illustration required of the way things would be likely to drift with small and independent degree-granting corporations, we might find it in the readiness with which the authorities of King's College threw over Latin two years ago in the mercantile department of their school (then in a state of depression), at the mere bidding of the Chambers of Commerce, although its retention had been advocated by two leading scientific men. The really inspiring motive of this agitation is, I think, astutely kept in the background.

A. IRVING.

Wellington College, Berks, June 1.

ONE of the taunts most frequently levelled at the London University—or "Burlington Gardens," to use Prof. Lankester's favourite expression—by certain professors of University College and other advocates of a "teaching University in and for London" is, that the present University is a "mere examining board." The University has, it is true, a Brown Professor of Physiology and Pathology, who delivers annually a course of lectures relating to the studies and researches carried on at the Brown Institution. But this professorship is an exception, though the University, by accepting the Brown Trust, showed clearly enough that it did not recognize any obligation to abstain from appointing University Professors and Lecturers. We have been previously told that there was a "tacit understanding" at the foundation of the University that this should not be done. But Prof. Ray Lankester goes far beyond the assertion of a "tacit understanding." He talks of "pledges" given by the founders of the University being "falsified," and "most solemn obligations" violated—terrible crimes, which, however, have been committed already by the appointment of the Brown Professor. But how such "obligations" and "pledges," or even a "tacit understanding," could ever have existed, I fail altogether to see, for it was the expressed intention of the founders of the University that its powers and privileges should be the same as those of the Universities of Oxford and Cambridge. Testimony as to this pledge may be found in the evidence given before the recent Commission. The late Dr. Carpenter's view of this matter was stated by Mr. Dickins in his communication to NATURE. Convocation has, years ago, voted in favour of the establishment of University Professorships and Lectureships, though I do not in the least believe that the graduates would sanction any proposal involving that the University should prepare candidates for its examinations, or compete with the ordinary work of the Professors in University College and other similar institutions. Whether research is or is not carried on successfully at University College is a matter on which I express no opinion. But, however this may be, it should be remembered that the students of this College have become only a small fraction of the candidates for London degrees. It would be, it seems to me, in the public interest that the University should make provision for the encouragement and reward of those among the great majority of its members who show a capacity for research and a power to extend the boundaries of knowledge. That the University has only one solitary Professor is due, I believe, in great measure to the narrowminded and unwise jealousy of University College, and to the fear lest some endowments should chance to be diverted to the University.

Prof. Lankester abandons altogether the scheme set forth in the Draft Charter of the "Albert University of London." This Charter proposed the establishment of a University whose range of activity should extend over colleges or other institutions in an area with a diameter of thirty miles. Prof. Lankester's ideal University, which would still be federal, is to consist only of University and King's Colleges. These institutions have not as yet shown any disposition to amalgamate the one with the other, and such a disposition is not likely to arise. They are, in fact, founded on distinct principles. The motto of the one, if I recollect rightly, is *Cuncti adsint* and of the other *Sancte et sapienter*. Some time ago I heard of a Society of University